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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/083,878	02/27/2002	Xiang Zheng Tu	9330	6958

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EXAMINER

CONNELLY CUSHWA, MICHELLE R

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 05/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/083,878

Applicant(s)

TU, XIANG ZHENG

Examiner

Michelle R. Connelly-Cushwa

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 11-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5 and 7-10 is/are rejected.
- 7) ☒ Claim(s) 3 and 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-10, drawn to an optical switch array assembly, classified in class 385, subclass 16.
- II. Claims 11-22, drawn to a method of making an optical switch array, classified in class 385, subclass 147.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by other materially different processes.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Bruce H. Johnsonbaugh on April 12, 2003 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-10. Affirmation of this election must be made by applicant in replying to this Office action. Claims 11-22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Drawings***

Five (5) sheets of formal drawings were filed on February 27, 2002 and have been accepted by the Examiner.

***Specification***

Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 4, 5, 7, 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Regarding claim 4; the claim recites the limitation "the glass plate" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim. Examiner suggests changing "claim 1" in line 1 of claim 4 to —claim 3—to overcome this rejection because claim 3 defines the glass plate.

Regarding claim 5; the claim recites the limitation "the glass plate" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim. Examiner suggests changing "claim 1" in line 1 of claim 5 to —claim 3—to overcome this rejection because claim 3 defines the glass plate.

Regarding claims 7, 9 and 10; the claims inherently contain the deficiencies of any base or intervening claims from which they depend.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 2 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Toshiyoshi et al. (“Electrostatic Micro Torsion Mirrors for an Optical Switch Matrix”).**

Regarding claims 1, 2 and 8; Figures 1 and 9 of Toshiyoshi et al. disclose an optical switch array assembly comprising:

- a silicon substrate (torsion mirror chip, see the first paragraph of section II);
- an optical switch array formed by mirrors ( $M_1, M_2, M_3, M_4$ ) disposed in the silicon substrate (torsion mirror chip);
- driving and addressing circuits formed by electrical leads in the silicon substrate (torsion mirror chip), wherein the electrical leads are connected to a control voltage, and wherein the driving circuit forces the optical switches on and off; and
- a plurality of holes (grooves) on the backside of the silicon substrate (torsion mirror chip) each aligned with an optical switch and guiding an optical beam to the optical switch;

- where the optical switches can be switched on and off for releasing and blocking the optical beams.

***Allowable Subject Matter***

**Claims 3 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

**Claims 4, 5, 7, 9 and 10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.**

The following is a statement of reasons for the indication of allowable subject matter: The prior art cited on attached form PTO-892 is the most relevant prior art known, however, the invention of claims 3-7, 9 and 10 distinguishes over the prior art of record for the following reasons.

Regarding claim 3; the claim is allowable over the prior art of record because none of the references either alone or in combination disclose or render obvious an optical switch array as defined in claim 3, comprising a glass plate mounted on the top of the silicon substrate in combination with the other limitations.

Regarding claims 4, 7 and 9; the claims are allowable over the prior art of record because none of the references either alone or in combination disclose or render obvious an optical switch array as defined in claim 4, comprising a plurality of DNA probes disposed on the surface of the glass plate in combination with the other limitations. Claims 7 and 9 depend from claim 4

Regarding claims 5 and 10; the claims are allowable over the prior art of record because none of the references either alone or in combination disclose or render obvious an optical switch array as defined in claim 5, comprising a plurality of hybridized DNA probes disposed on the surface of the glass plate in combination with the other limitations. Claim 10 depends from claim 5.

Regarding claim 6; the claim is allowable over the prior art of record because none of the references either alone or in combination disclose or render obvious an optical switch array as defined in claim 6, where the optical switches are Fabry-Perot cavity based optical switches in combination with the other limitations.

Hence, there is no reason or motivation for one of ordinary skill in the art to use the prior art of record to make the invention of claims 3-7, 9 and 10.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Helble (US 6,163,635) discloses an optical switch wherein light is direction through a hole in a substrate towards a switching element (see Figure 3); Tayebati et al. (US 2002/0154854 A1) discloses an optical switching apparatus having a substrate with a hole (65) therein for direction light towards a switching element (50); Dorschner et al. (US 5,963,682) discloses an optical switch array having a substrate with holes therein for holding optical fibers and guiding light towards switching elements (see Figure 1); and Dautartas (US 6,408,120 B1) discloses an optical switching array having a plurality of substrate with aligned holes therein to guide light towards switching elements (16) located on a separate substrate.

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Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (703) 305-5327. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956 or to the technical support staff supervisor at telephone number (703) 308-3072.

Michelle R. Connelly-Cushwa  
**MRCC**  
May 15, 2003

  
**AKM ENAYET ULLAH**  
**PRIMARY EXAMINER**